

Abstract:

Brownfield Clean Up In-situ With Nitrogen will remove organic materials in the soil by freezing the volume in which the organics are penetrated and then, keeping the periphery frozen, heats the center and circulates pure, inert Nitrogen gas to carry the material to the surface.

This can be done anywhere leaving buildings and growth in place during the process. It is a rapid process since the cold is achieved using Liquid Nitrogen sourced Nitrogen gas at -190°C. and then heating to a temperature several degrees above the evaporation temperature of the contaminating organic material.

As the Nitrogen carrying the contaminant comes out at the surface, the contaminant is condensed from the carrier gas and collected. The material can be then disposed of in a rather pure form limiting the amount to be recycled or disposed of properly.

This method is an abbreviated form of the fuel extraction technology of CryoRain Inc. which is recommended for taking all fuels from oil shale and from landfill seams.

Safety issues includes the fact that Nitrogen is a fire suppressant, NFPA Code 2001, which enables heating the ground to temperatures that might otherwise ignite the organics polluting it by eliminating Oxygen from the space which prevents any fires or explosions.

Also, we have a training program for crews doing this work, either part of the CryoRain Inc. service or work for other firms licensing the rights to use the technology. This includes safe handling of the cryogenic liquid, proper drilling and application, collecting the water and organics recovered and sealing the containments, returning the site to original status.

This method uses no water and prevents the liquid or gaseous organics from entering aquifers or other ground water. Any ground water within the space frozen that is then heated will be drawn to the surface with the contaminant and any other contained organics.

The procedure can be carried out with tanks that are totally empty and aired out while still in the ground. After the contaminants are removed, one can safely dig to areas of these tanks that require service as patching or tightening pipe attachments which caused a leak. The tank could also be coated from the inside to seal the leaking areas in the walls.

Once the contaminant is removed and the cause for any leak or spillage corrected, the function of the facility can be restored and operations resumed.

This technique is patented under USP 7,631,506 issued December, 2009 and other pending patents of Denyse DuBrucq, CEO of CryoRain Inc.

The accompanying slide set illustrates the method.

425 words

Bio of Speaker:

Denyse DuBrucq EdD is CEO of CryoRain Inc. and inventor of the technology CryoRain is licensing. She studied across the sciences at the University of Wisconsin-Madison 1955-63 in L&S and Agriculture and went on to earn a doctorate in Science Education from the University of Northern Colorado - Greeley in 1977. Her inventions started with individual learning puzzles in 1968 and continued with the TactilEar, a device to provide real time hearing for the deaf in 1982, laminate batteries in 1987 and e3tv - super high definition digital television in 1989. Her Nitrogen discoveries were seeded in 1991 when working to help end the Kuwait Oil Well Fires and the discovery of raining the cryogen, Liquid Nitrogen, to get pure, inert Nitrogen gas came in 2003 when she offered to end the Iraq Oil Pipeline fires in a few hours causing the contractor there to stop the ten day effort practice and end the fires in one day which saved the Federal Government some \$4.4billion at the time leaving terrorists not willing to take the risk in lighting the fires for only a one day burn and the contractor exasperated at her for killing their cash cow. Her relevant patent here, USP 7,631,506, will be perhaps the most basic science discovery this century. Experts state it is too basic to be science, but it applies from Nuclear science through fire, including wildfire and coal mine fire control, and crises, including non-lethal weaponry to spill cleanup, flood control and dissipating tornados, to fuel extraction, remediation, clean coal, toxin capture and mine safety. Using Nitrogen rather than water eliminates water damage and electrical arcing making return to operations following an event more rapid and less costly. This new science, Thermistry, powers events by temperature change while preventing chemical reaction.

Word count – 297

Other input:

First name *Last Name*
Denyse DuBrucq
Company: CryoRain Inc.
1 Webster Street
Arlington MA 02474-5203 USA
937 766-4660 CryoRaininc@aol.com
Topic: Brownfields/redevelopment

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A single Oral Presentation

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